

What is claimed is:

Sub A187 1. A point to point facility transport system for the transport of 100BaseTX Ethernet frame data over N copper wire pairs connecting a central office facility to a customer premise, comprising:

5 N downstream transmission paths for transporting 100BaseTX Ethernet frame data transmitted from the central office facility destined to the customer premise;

N upstream transmission paths for transporting 100BaseTX Ethernet frame data transmitted from the customer premise destined to the central office facility;

first modem means located at the central office facility and coupled to one end of said

10 N downstream transmission paths and one end of said N upstream transmission paths;

second modem means located at the customer premises and coupled to the other end of said N downstream transmission paths and the other end of said N upstream transmission paths;

15 wherein said first modem means and said second modem means are operative to place onto and receive from said N copper wire pairs, data frames encapsulating said Ethernet frame data; and

wherein N is a positive integer in the range of one to four.

2. The facility transport system according to claim 1, wherein said downstream transmission path utilizes quadrature amplitude modulation (QAM) to transport said Ethernet frame data from said central office facility to said customer premise.

3. The facility transport system according to claim 1, wherein said upstream transmission path utilizes quadrature amplitude modulation (QAM) to transport said Ethernet frame data from said customer premise to said central office facility.

Sub A197 25 4. The facility transport system according to claim 1, wherein said first modem means and said second modem means further comprise:

a physical layer module for performing physical layer functions for 100BaseTX Ethernet, said physical layer module operative to communicate over a Media Independent Interface (MII) bus;

a data splitter adapted to divide the MII data stream into N output data streams, each output data stream destined for a transmitter;

N transmitters for coupling to said N copper wire pairs, each transmitter adapted to modulate one of said data streams output of said data splitter so as to generate a transmit signal therefrom suitable for transmission onto one of said N copper wire pairs;

N receivers for coupling to said N copper wire pairs, each receiver adapted to demodulate a signal received from one of said N copper wire pairs so as to generate a receive data signal therefrom; and

a data collector adapted to receive said N receive data signals from said N receivers and to combine and reorganize said N receive data signals into a single data stream for output via said physical layer module in a form compatible with 100BaseTX.

5. The facility transport system according to claim 4, further comprising an auto sense unit operative to sense the number of transmitters and receivers installed in a modem.

6. A point to point facility transport system for the transport of 100BaseTX Ethernet frame data and plain old telephone service (POTS) over N copper wire pairs connecting a central office facility to a customer premise, comprising:

N downstream transmission paths for transporting 100BaseTX Ethernet frame data and POTS transmitted from the central office facility destined to the customer premise;

N upstream transmission paths for transporting 100BaseTX Ethernet frame data and POTS transmitted from the customer premise destined to the central office facility;

first modem means located at the central office facility and coupled to one end of said N downstream transmission paths and one end of said N upstream transmission paths;

second modem means located at the customer premises and coupled to the other end of said N downstream transmission paths and the other end of said N upstream transmission paths;

first splitter means coupled to said first modem means and to said V copper wire pairs;

second splitter means coupled to said second modem means and to said N copper wire pairs;

wherein said first modem means and said second modem means are operative to place onto and receive from said N copper wire pairs data packets encapsulating said 100BaseTX Ethernet frame data;

wherein said first splitter means and said second splitter means are operative to combine and split said POTS and N downstream and N upstream transmission path signals; and

wherein N is a positive integer in the range of one to four.

7. The facility transport system according to claim 6, wherein each downstream transmission path utilizes quadrature amplitude modulation (QAM) to transport said 100BaseTX Ethernet frame data from said central office facility to said customer premise.

8. The facility transport system according to claim 6, wherein each upstream transmission path utilizes quadrature amplitude modulation (QAM) to transport said 100BaseTX Ethernet frame data from said customer premise to said central office facility.

9. The facility transport system according to claim 6, wherein said first modem means and said second modem means further comprise:

a physical layer module for performing physical layer functions for 100BaseTX Ethernet, said physical layer module operative to communicate over a Media Independent Interface (MII) bus;

a data splitter adapted to divide the MII data stream into N output data streams, each output data stream destined for a transmitter;

N transmitters for coupling to said N copper wire pairs, each transmitter adapted to modulate one of said data streams output of said data splitter so as to generate a transmit signal therefrom suitable for transmission onto one of said N copper wire pairs;

N receivers for coupling to said N copper wire pairs, each receiver adapted to demodulate a signal received from one of said N copper wire pairs so as to generate a receive data signal therefrom; and

a data collector adapted to receive said N receive data signals from said N receivers and to combine and reorganize said N receive data signals into a single data

stream for output via said physical layer module in a form compatible with 100BaseTX.

10. A point to point facility transport system for the transport of 100BaseTX Ethernet frame data over N copper wire pairs connecting a central office facility to a customer premise,  
5 comprising:

N downstream transmission paths for transporting 100BaseTX Ethernet frame data transmitted from the central office facility destined to the customer premise;

N upstream transmission paths for transporting 100BaseTX Ethernet frame data transmitted from the customer premise destined to the central office facility;

10 switch means located at the central office facility and coupled to one end of said N downstream transmission paths and one end of said N upstream transmission paths;

15 a network element located at the customer premises and coupled to the other end of said N downstream transmission paths and the other end of said N upstream transmission paths; and

wherein said switch means and said network element are operative to place onto and receive from said N copper wire pairs data frames encapsulating said 100BaseTX Ethernet frame data.

20 11. The facility transport system according to claim 10, wherein each downstream transmission path utilizes quadrature amplitude modulation (QAM) to transport said 100BaseTX Ethernet frame data from said central office facility to said customer premise.

12. The facility transport system according to claim 10, wherein each upstream transmission path utilizes quadrature amplitude modulation (QAM) to transport said 100BaseTX Ethernet frame data from said customer premise to said central office facility.

Sub A92 25 13. The facility transport system according to claim 10, wherein said switch means and said network element further comprise:

a physical layer module for performing physical layer functions for 100BaseTX Ethernet, said physical layer module operative to communicate over a Media Independent Interface (MII) bus;

a data splitter adapted to divide the MII data stream into N output data streams, each output data stream destined for a transmitter;

N transmitters for coupling to said N copper wire pairs, each transmitter adapted to modulate one of said data streams output of said data splitter so as to generate a transmit signal therefrom suitable for transmission onto one of said N copper wire pairs;

N receivers for coupling to said N copper wire pairs, each receiver adapted to demodulate a signal received from one of said N copper wire pairs so as to generate a receive data signal therefrom; and

a data collector adapted to receive said N receive data signals from said N receivers and to combine and reorganize said N receive data signals into a single data stream for output via said physical layer module in a form compatible with 100BaseTX.

14. The facility transport system according to claim 10, wherein said network element comprises a modem.

15. The facility transport system according to claim 10, wherein said network element comprises a customer premise switch.

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